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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,188

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EXAMINER

TUROC, DAVID P

ART UNIT

PAPER NUMBER

1715

MAIL DATE

DELIVERY MODE

10/15/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,188	Applicant(s) NASHERI ET AL.	
	Examiner DAVID TUROCY	Art Unit 1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-27 and 29-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-27 and 29-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendments, filed 9/1/2010, have been fully considered and reviewed by the examiner. The examiner notes the amendment to the claims to require "substantially all" solution is liquid. The examiner notes the addition of new claims 32-41. Claims 1, 3-27, 29-41 are pending in the instant application.

Response to Arguments

2. Applicant's arguments filed 9/1/2010 have been fully considered but they are not persuasive.

The applicant has argued that the claimed invention is a remarkable improvement because it requires significantly less steps and less acetylating reaction time. Initially, the examiner notes that the claims include comprising language and therefore the present claims do not exclude additional steps and therefore the mere presence of more steps in the prior art does not effectively negate the rejection of record. As for the acetylating reaction time, this argument is not commensurate in scope with the claims because the independent claims fail to require the reaction time. Additionally, this argument does not specifically address the rejection of record, where EP 810 discloses a few minutes of impregnation (page 3, lines 20-24).

As for the general yield of up to 28% versus the prior art of up to 24%, this is clearly not commensurate in scope with the claims because the claims are broadly drafted. Additionally, the prior art discloses a range that reads on the argued range, i.e.

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24% yield is within the range of less than 28% yield. Additionally, the mere disclosure of a single example of having 24% yield does not limit the teaching of the reference to only up to 24% as argued by the applicant.

The applicant has argued that the EP 810 reference fails to disclose the entire working solution is required to be specifically preheated to a temperate of 150°C and subject to elevate pressure to remain in liquid phase. The EP 810 reference explicitly state applying a liquid solution to the wood.

As for the requirement of temperature, the applicant argues that the range of 30-150 is significantly outside of 150-250. The prior art explicitly discloses 150 as a temperature and this is within the range as claimed and thus it is unclear how this is significantly outside of range as claimed. Additionally, at the very least, a *prima facie* case of obviousness exists where the claimed ranges and prior art do not overlap but are close enough that one in ordinary skill in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 f.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

EP 810 explicitly discloses preheating the solution to 150°C and applying the liquid phase solution to the wood, as discussed in the prior rejection. As for maintaining a pressure throughout the preheating step to ensure the working solution is maintained in a liquid phase, this is explicitly inherent in the teaching of EP 810 that the solution is a liquid solution warmed and applied. Additionally, the examiner notes the claims fail to require the all acetylating agent to remain in liquid form and therefore since the prior art discloses a 150° super heated liquid, it is the examiners position that

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the pressure is maintained so as to ensure a working solution is liquid. Additionally, if any vapor phase exist, this vapor phase would not be considered a working solution in liquid form. Since the claims include comprising language, i.e. other process steps or other process parameters not specifically listed, the claims are open to a portion of the agent being in the vapor phase because there exists an entire working solution in the liquid phase.

The applicant has argued that the specification discloses that pressure is applied so that the working solution is in the liquid form when applied and therefore the specification limits the pressure to the those sufficient to stop the solution from boiling at the elevated temperature. This is clearly not commensurate in scope with the claims and the examiner notes that this must support the examiners position, EP 810 discloses a 150°C solution applied as a liquid and therefore meets the requires as set forth in the specification.

The applicant has argued that the prior art fails to acknowledge that there needs to be sufficient pressure applied to maintain the entire solution in liquid form. The applicant argues the pressure applied eliminates the boiled off vapors. However, the examiner notes the EP 810 reference explicitly discloses application of a liquid solution, not a gaseous material, and the examiner maintains that the relationship between temperature and pressure are known result effective variables and it would have been obvious to one of ordinary skill in the art to apply pressure during the preheating step to maintain the solution in liquid state because one would reasonable expect predictable results in the modification and one would be motivated to provide a

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liquid medium to reap the benefit of reducing the boiling of the material and the loss of gaseous material, i.e. reduction of unused gas material. The examiner cites here “Boiling”, which explicitly discloses the relationship between the liquid phase and the pressure and the known relationship between the pressure and boiling point. In other words, increasing the pressure will increase the boiling point to maintain the liquid phase and at the very least increasing the pressure to maintain a liquid phase, i.e. by increasing the boiling point, would have been obvious to one of ordinary skill in the art at the time of the invention to reap the benefits of application of a liquid material.

The applicant continually argues that the liquid phase at the disclosed temperature provides certain advantages, but fails to discuss the EP 810 reference disclosure of 150°C being within the range as claimed and the correlation between the disclosure that the working solution is applied as a liquid, not a gas.

The applicant has failed to address the rejection of record and the fact that EP 810 discloses applying a liquid and the acetic anhydride solution at 150° and one of ordinary skill in the art would understand application of pressure would provide predictable results to maintain the material in liquid form, see “Boiling”. A predictable use of prior art elements according to their established functions to achieve a predictable result is prima facie obvious. See *KSR Int’l Inc. v. Teleflex Inc.*, 127 S Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

The applicant has argued that it is counter-intuitive to acetylate wood at a super hot temperatures; however, this is clearly unsupported by any factual evidence and

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therefore moot. Additionally, the prior art as cited by the examiner discloses applying the solution within the range as claimed and disclosed by the applicant.

The applicant has argued that the working solution temperature facilitates the removal of corrosive unwanted acetic acid, however, this argument is not commensurate in scope with the claims as drafted.

The applicant has provided some argument with respect to the benefits obtained by the process as claimed; however, the present claims are clearly not commensurate in scope with the claims as drafted.

The prior art vessels can broadly be considered "pressure vessels" as discussed in the prior office action. At the very least the use of pressure vessels would have been obvious to one of ordinary skill in the art.

As for the separate heating vessel, the prior art discloses heating device and this is sufficient to read on the claim as written (i.e. a heating device to heat the pipe would result in the pipe being considered a warming vessel). It appears as though the applicant is narrowly reading the claim limitations.

As for the arguments against US 407, the applicant argues that the use of nitrogen gas already at the impregnation stage and argues that there is no mention of applying prepressure to the wood prior to impregnation with N₂ gas. However, US 407 explicitly discloses an overpressure using N₂ generated first, prior to supplying water to the chamber, i.e. to create the pressure within the chamber (Column 3, lines 30-31).

As for the arguments with regards to US 998, the examiner notes that these arguments are not commensurate in scope with the claims as drafted and therefore are

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deemed moot. The EP 810 reference discloses providing a prepressure within the chamber and US 998 discloses a known and suitable technique for providing this pressure includes supplying air into the chamber.

Applicant's arguments with regard to US 582 are persuasive and therefore this rejection has been withdrawn. The examiner cites US 3720661 as a teaching of acetylating treatment with liquid at 150-220°C.

All other applicant's arguments that are not specifically addressed above are either 1) not commensurate in scope with the claims or 2) unsupported by any factual evidence and therefore these arguments are deemed moot.

Claim Rejections - 35 USC § 112

3. Claims 1, 3-27, 39-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The requirement of "substantially all" solution remaining in the liquid phase is not supported explicitly by the specification and the examiner after a cursory review of the specification can not locate implicit support for this limiting requirement. If the applicant can provide adequate support for the claim amendment the examiner will withdraw this rejection.

4. Claims 34-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The requirement of "at least 151°" is not taught in the specification and therefore is considered new matter. Specifically, the lower limit of 151° is not disclosed and all temperatures above that, such as 1000°, are not taught by the specification. If the applicant can provide adequate support for the claim amendment the examiner will withdraw this rejection.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 31,32, 35-36, 37-38, 40-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims require a working solution is maintained in liquid phase and not vapor phase; however it is unclear how a solution can be in vapor phase as required by the claims. By definition a solution is a liquid and therefore "not in vapor phase" is redundant.

7. Claims 39-41 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 39-41 requires a "relatively large pieces of wood"; however, this does not sufficiently define the metes and bounds of the invention. Specifically, the wood is large relative to what. For the purposes of applying art, the examiner will interpret the claims

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to require a piece of wood, of any size, which would be large relative to a smaller piece of wood.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 3, 6-8, 11-24, 31-41 are rejected under 35 U.S.C. 103(a) as being EP 0680810 A1, hereafter EP 810 in view of admitted state in the art (ASA) and "Boiling".

EP 810 is applied here as applied in the prior rejection dated 2/4/2010 in combination with the remarks of section 2 above, each of which is incorporated herein by reference. The examiner cites here "Boiling" to support the obviousness.

The examiner notes the EP 810 reference explicitly discloses application of a liquid solution, not a gaseous material, and the examiner maintains that the relationship between temperature and pressure are known result effective variables and it would have been obvious to one of ordinary skill in the art to apply pressure during the preheating step to maintain the solution in liquid state because one would reasonable expect predictable results in the modification and one would be motivated to provide a liquid medium to reap the benefit of reducing the boiling of the material and the loss of gaseous material, i.e. reduction of unused gas material. The examiner cites here ASA which discloses the known boiling point of the acetic anhydride being less then the heated temperature as taught by EP 810 and "Boiling", which explicitly discloses the

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known relationship between the liquid phase and the pressure and the known relationship between the pressure and boiling point. In other words, increasing the pressure will increase the boiling point to maintain the liquid phase and at the very least increasing the pressure to maintain a liquid phase, i.e. by increasing the boiling point, would have been obvious to one of ordinary skill in the art at the time of the invention to reap the benefits of application of a liquid material.

As for the requirement of not vaporized, taking the entire teaching of EP 810 in combination with the knowledge of one of ordinary skill in the art and "Boiling", one of ordinary skill in the art would have been motivated to keep the material in liquid form solution by applying pressure because EP 810 explicitly discloses applying liquid material and one of ordinary skill in the art understands that increasing the pressure will increase the boiling point, i.e. prevent vaporization, and provide a liquid medium to apply as required by EP 810.

Additionally, the examiner notes that the claims require the working solution is in liquid phase and not vapor phase, however, this clearly is met by application of the liquid solution as required by EP 810 because the solution is not a gaseous material. In other words, the claims require applying a working solution as a liquid, but any liquid solution is not in gaseous phase.

Claims 34-36: EP 810 discloses 150° which is close to the range as claimed. A *prima facie* case of obviousness exists where the claimed ranges and prior art do not overlap but are close enough that one in ordinary skill in the art would have expected

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them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 f.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

Claims 37-38: These claims are rejected for the same reasons as claim 21.

Claim 39-41: It is the examiners position that the wood chips are relatively large as required by the claims because as shown above in the 35 USC 112 2nd paragraph rejection, the applicant has failed to provide any reference point in the claims and therefore the chips as exemplified by EP 810 are relatively large compared to smaller chips, etc.

10. Claim 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 810 in view of ASA and "Boiling" and further in view of US Patent 5679407 hereinafter US 407 or US Patent 4466998 hereinafter US 998.

EP 810 in view of "Boiling" discloses all that is taught above, including applying a pre-pressure to the chamber; however, the reference fails to disclose using a gas as claimed. However, US 407 discloses applying a pre-pressure to a wood prior to impregnation using N₂ gas and US 998 discloses providing pre-pressure using air. Therefore it would have been obvious to have modified in view of ASA and "Boiling" to have used N₂ or air gas to provide the pre-pressure because such is taught as known and suitable techniques in wood impregnation art to provide preliminary pressure prior to impregnation.

Claim 5: this claim is rejected for the reasons as set forth above.

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11. Claims 25-26 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 810 in view of ASA and "Boiling" and further in view of US Patent 3720661, hereinafter US 661.

Claims 25-26 and 34-36: EP 810 in view of ASA and "Boiling" discloses all that is discussed above, and while the examiner maintains the position as above, the examiner cites US 661 which discloses applying a heated liquid solution of 150-220 to the wood in an acetylating process and therefore modification EP 810 in view of ASA and "Boiling" to use the solution temperature as taught in the US 661 with a reasonable expectation of predictable results.

12. Claims 27, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 810 in view of ASA and "Boiling" and further in view of US Patent 6376582, hereinafter US 582.

Claims 27, 29-30: EP 810 in view of ASA and "Boiling" discloses applying acetic anhydride solution to the wood, but fails to disclose a solvent of xylene, however, US 582 discloses the advantages of using xylene as a solvent for acetic anhydride include providing the reaction to proceed under more moderate conditions rather than the traditional exothermic conditions which will result in wood degradation. Therefore taking the references collectively, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified EP 810 in view of ASA and "Boiling" to use xylene to achieve the benefit of reduction of wood degradation.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID TUROCY whose telephone number is (571)272-2940. The examiner can normally be reached on Monday, Wednesday, Friday, 7 a.m.-6 p.m., Tuesdays 7 a.m.-3:30 p.m. and Thursday 7-10 a.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Turocy/
Primary Examiner, Art Unit 1792